

Machine Shop Safety

LBNL Publication 3000 5.3.8 Machine Shop Safety

Machine shop safety is included in the Machine Safeguarding Program in order to promote safety awareness in the shop. Machine shop safety, along with machine safeguarding, ensures the safety of both the employee and the machine tool.

The following rules apply to machine shop safety. **(Rules more specific to each machine shop based upon type of user and work may be added.)**

- **Approved eye protection must be worn at all times while in the shop. This rule applies to visitors as well as to those working on the machinery.**
- **No bare feet or open-toed sandals are allowed in the shop.** Long hair must be tied back, long sleeves cuffed or rolled up, and loose jewelry secured when working on the machinery.
- **No food or drink is allowed in the machine shops.** Use only designated areas for eating and drinking.
- **Do not work alone in the shop.** Use the buddy or two-person system in order to have someone present in the shop to summon help in case of an accident.
- Secure and clamp down all work pieces in drill presses and milling machines. This will prevent work from being lifted up or spun around with the cutters. Use all available machine guards and be wary of points of contact with rotating cutters and chucks.
- Use push sticks or some other approved method for keeping fingers away from moving blades on bandsaws.
- Use a vacuum cleaner and the "Blazo-Cut" water-soluble lubricant when machining nonmetallic substances (macor, micarta, phenolics, etc.). This will help control airborne dust.
- Do not machine-grind or cut any radioactive or other solid toxics (beryllium, asbestos, etc.) in the shop. When machining lead, follow the posted or prescribed rules for handling hazardous materials.
- Do not leave keys in chucks of lathes, drill presses, and milling machines. The key can be thrown out with great force when machinery is turned on. This also applies to wrenches used to tighten the cutting tools into the spindles of milling machines.
- Use a brush or wooden dowel to remove chips from the machining area. Chips can be very sharp and are often very hot.
- Clean up the work area with a brush and dustpan. Do not use compressed air to blow chips off machinery. Vacuum the machine and sweep the floor area of any remaining chips.
- Do not attempt any unfamiliar operations. When in doubt, seek advice and help from your supervisor.
- Follow the guidelines posted on the walls of the shop and, in some cases, on the individual piece of equipment.
- In order to prevent injuries to you and damage to the equipment, do not attempt to overload the capabilities of the machinery.
- **Remember: when in doubt, see your supervisor.**

LBNL Publication 3000 5.7.8 Safety Practices

Any LBNL facility housing shop tools is a shop. It is the responsibility of the person in charge of each shop and the areas where hand or power tools are being used to ensure compliance with the following practices:

- **The supervisor-in-charge must take whatever action is deemed necessary to prevent personal injury or damage to equipment.**
- **Shop machines and tools are to be used only by qualified personnel.** It is the responsibility of the person in charge of the shop to render a judgment as to who is qualified.
- **Equipment guards and protective devices must be used and must not be compromised.**
- **Approved eye protection must be worn by anyone working in and/or passing through a shop area.**
- **Shoes or boots covering the whole foot must be worn in all shop areas.**
- Persons using machine tools must not wear clothing, jewelry, or long hair in such a way as to present a safety hazard.

LBNL Publication 3000 5.3.12 Responsible Parties

5.3.12.1 Supervisors

Supervisors must make certain that personnel know how to operate machine tools. Only those employees who are formally qualified by training and certification may operate machine tools.

Supervisors must enforce the use of safe machine tool use and maintain machine tools in good mechanical and operating condition.

5.3.12.2 Employees

Employees are required to observe all established safety regulations relating to machine tool use and operation.

EH&S provides training programs for employees and individual authorization for those who have demonstrated the ability to operate machine tools.

Responsibility for all machine tool use is shared between the supervisor or person responsible for the shop and the actual machine tool user. Machine tool users are responsible for:

- Adhering to all machine shop safety requirements, rules and regulations.
- Upon request, providing the shop supervisor with information regarding the certification of user authorization.
- Providing suggestions on improving safeguarding that may already be in place.
- Reporting any machine that does not have a safeguard for all points of operation or rotational motion; nip points; and cutting, shearing, punching, and forming mechanisms.
- Wearing appropriate clothing to perform the job (i.e., no loose-fitting clothing or jewelry).
- Safe machine tool use and maintaining machine tools in good mechanical and operating condition.
- Reporting immediately any machine tools that exhibit signs of excessive wear or have damaged or misused parts (e.g., a lathe that is leaking an excessive amount of oil or a drill press that appears to have a faulty chuck).

LBNL Publication 3000 19.3 Foot Protection

The Laboratory encourages the wearing of safety shoes by making them available to all employees at cost, delivered from a manufacturer's shoemobile. **For certain types of work, wearing safety shoes is required by Laboratory policy or by federal regulations (29 CFR 1910.136) as specified in American National Safety Standard Z41.1. Examples are work that exposes employees to foot injuries from hot, corrosive, or poisonous substances; work in shops, in equipment handling, or in construction jobs where there is a danger of falling objects; or work in abnormally wet locations.**

When safety shoes are required by Laboratory policy, the department requesting them will contribute an amount toward their cost, as determined each year by the Director's Office. However, if the employee selects safety shoes for which the total cost (including sales tax) exceeds this amount, the difference must be paid by the employee. Authorization forms (#7600-65158) are available from the Central Storeroom. The manufacturer's shoemobile sells safety shoes without a supervisor's authorization when employees wish to purchase them through the low-cost program (payroll deduction). Safety shoes are furnished by LBNL for certain off-site operations for which a formal hazard evaluation has established the need for this protection.

OSHA Regulations (Standards - 29 CFR) Occupational foot protection. - 1910.136

Standard Number: 1910.136

Standard Title: Occupational foot protection.

SubPart Number: I

SubPart Title: Personal Protective Equipment

(a) General requirements. The employer shall ensure that each affected employee uses protective footwear when working in areas where there is a danger of foot injuries due to falling or rolling objects, or objects piercing the sole, and where such employee's feet are exposed to electrical hazards.

(b) Criteria for protective footwear.

(b)(1) Protective footwear purchased after July 5, 1994 shall comply with ANSI Z41-1991, "American National Standard for Personal Protection-Protective Footwear," which is incorporated by reference as specified in Sec. 1910.6, or shall be demonstrated by the employer to be equally effective.

(b)(2) Protective footwear purchased before July 5, 1994 shall comply with the ANSI standard "USA Standard for Men's Safety-Toe Footwear," Z41.1-1967, which is incorporated by reference as specified in Sec. 1910.6, or shall be demonstrated by the employer to be equally effective.